

INTRODUCING THE EXPANDABLE **PDP-10**

digital PDP-10/10

DIGITAL EQUIPMENT CORPORATION • MAYNARD, MASSACHUSETTS

digital PDP-10/20

DIGITAL EQUIPMENT CORPORATION • MAYNARD, MASSACHUSETTS

digital PDP-10/30

DIGITAL EQUIPMENT CORPORATION • MAYNARD, MASSACHUSETTS

digital PDP-10/40

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digital PDP-10/50

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Expandable PDP-



Add another 8K, and the I/O Bus Instant-Access Accumulators if you like, and maybe something from our complete line of peripherals (all of our systems utilize them effectively). Now you have PDP-10/30. And by the way, you can easily incorporate your own special devices into both the hardware & software system.

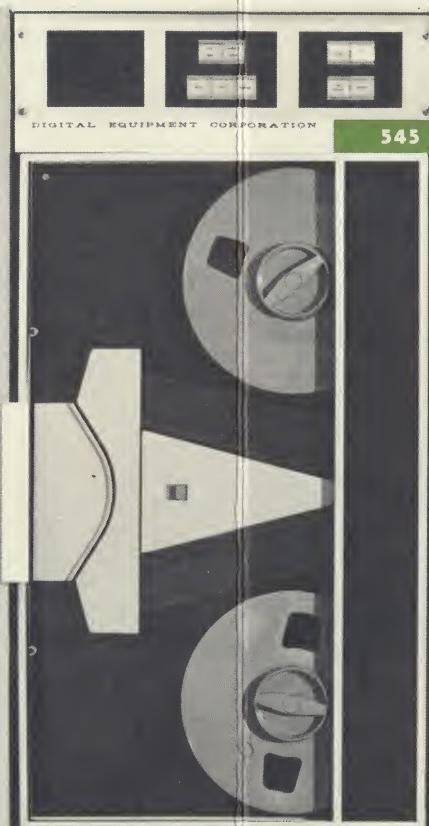


Add memory Protection & Relocation, and you've stepped up to our PDP-10/40 Multiprogramming Time Sharing system, which has Batch Processing and real Time capabilities . . . and your old programs will still run under time sharing!

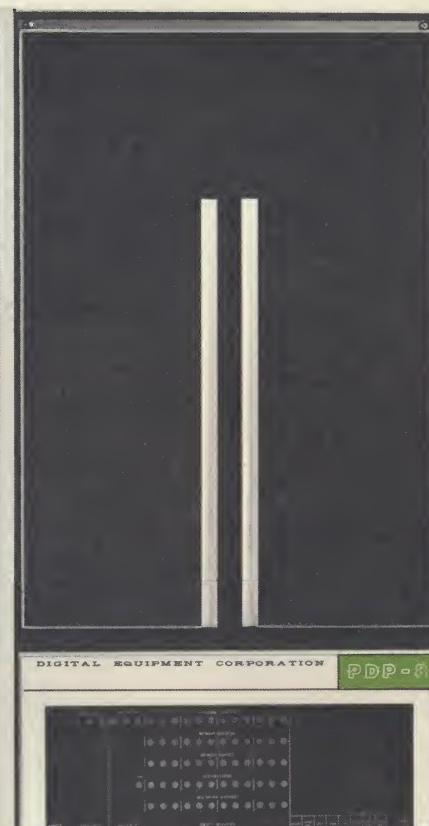
10's



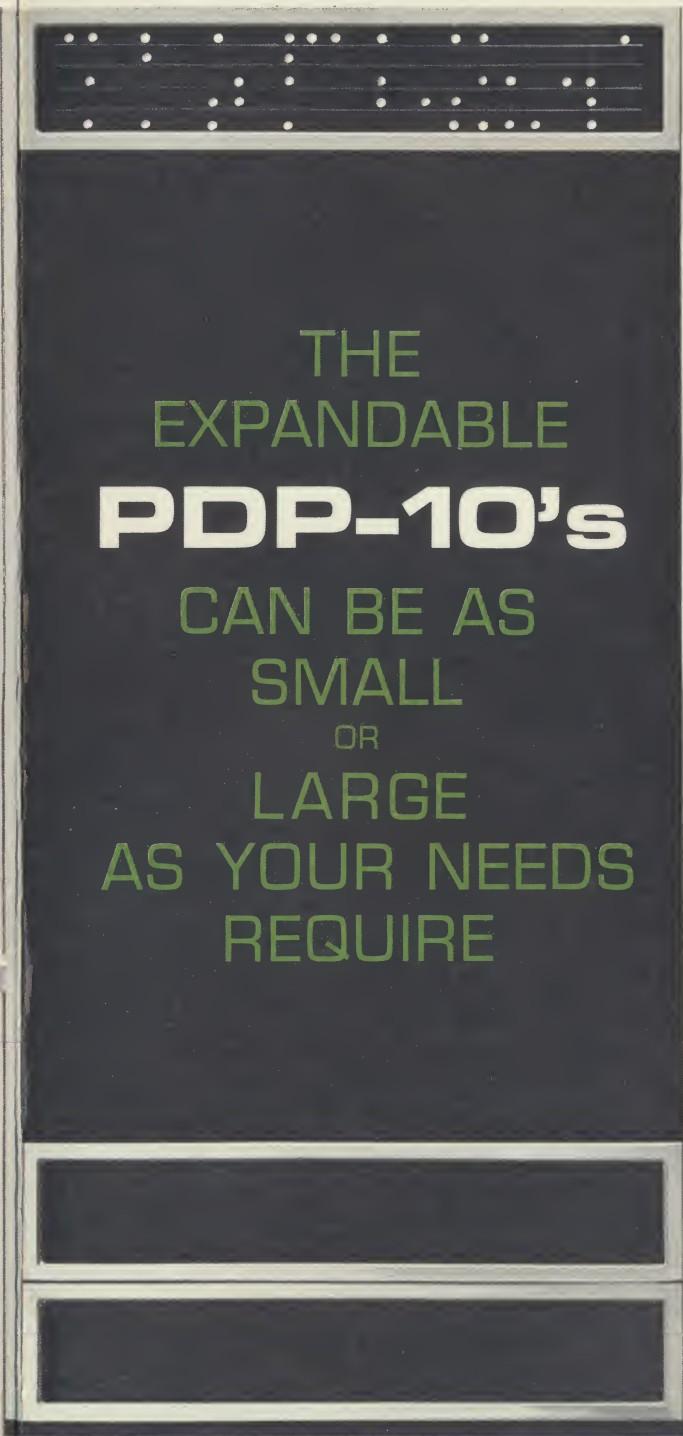
Add our Disc-File,
Magnetic Tapes
and a Selector
Channel,
plug in 16K
more core
memory,



and you
have our
PDP-10/50
Multiprogramming/
Swapping
Time-Sharing System.



If you want to multi-
process then add one of
our other computers
such as PDP-8. This
controls teletypes and
services specialized I/O
such as A-D converters,
displays, etc.



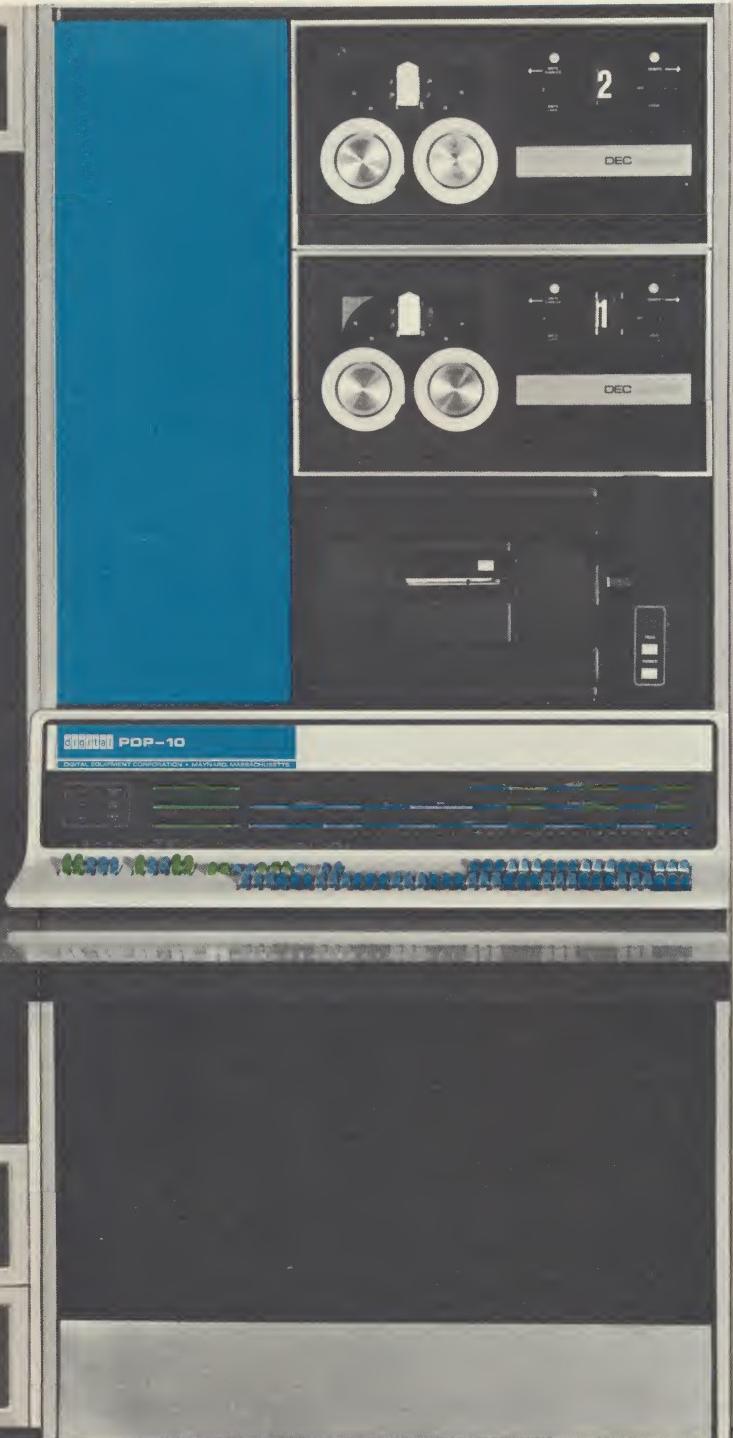
THE
EXPANDABLE
PDP-10's
CAN BE AS
SMALL
OR
LARGE
AS YOUR NEEDS
REQUIRE

The

Start with PDP-10/20 which includes
8K of core memory, 2 DEC Tapes

and:

- Monitor 10/20
- Fortran IV Compiler
- Macro Assembler
- Context Editor
- Symbolic Debugging Program
- I/O Controller
- Peripheral Interchange Program
- Desk Calculator
- Library Programs



PDP-10 HARDWARE CHARACTERISTICS

GENERAL

General purpose, stored program, binary digital computer
Parallel processing
Asynchronous operation
36 bit word
16 general purpose registers
High speed multiplexor channels
Programmed-priority interrupt system
7 fully-nested interrupt levels
Flexible I/O bus structure
Easily interfaced to special devices
Executive and user modes of operation
Functional operator console
High-reliability Flip-Chip logic

PROCESSOR

16 accumulators
15 index registers
Multilevel indirect addressing with indexing
Floating point hardware to 8 decimal digits
Immediate mode addressing of operands
64 programmed operators
Highly symmetric, logically complete order code
365 powerful instructions
Easy to learn, modular mnemonics
Data Manipulation by:
 36 bit word, half word, double word
 Bytes of any size (automatic sequential access)
 Memory blocks of any size
Typical Arithmetic Instruction times:
 Move to accumulator – 1.9 μ sec
 Fixed point 36 bit add – 2.1 μ sec

*Instruction times assume one instruction fetch and one operand fetch from overlapped 1.0 μ sec core memories and includes Fast Accumulators.

Floating point times are based upon average data.

Fixed point 72 bit multiply – 9.1 μ sec
Floating point add – 5.1 μ sec
Floating point multiply – 8.8 μ sec
Jump – 1.0 μ sec
All 16 Boolean operations, each in four modes
8 arithmetic comparison instructions, in eight modes
16 bit test/modify instructions, in four modes
Four kinds of subroutine call and return instructions
Push Down Stack Operations for:
 Data manipulation
 Inter-program transfer
 Re-entrant code
6 Arithmetic flags facilitate double precision
Programmable Trapping upon:
 Operator selected memory reference conditions
 Real time increment elapse
 Five distinguishable arithmetic overflow conditions
 Non-existent or illegal memory reference
 Push down list overflow
 Memory parity error
 Power failure detection

STORAGE

262,144 directly addressable 36 bit words
1.0 microsecond memory cycle time
Asynchronous operation with respect to processors
Nanosecond access times
Automatic parity checking
Memory protection
Dynamic program relocation
Memory Bus Structure permitting:
 Multiprocessing
 Memory modules of different speeds
 Program/data overlap
 Interleaving on low order bit(s)

16 instant access registers permit high speed:
 Indexing
 Accumulator fetch and store
 Program execution

PDP-10 SOFTWARE CHARACTERISTICS

FIVE COMPLETE SOFTWARE SYSTEMS

All systems achieve total modularity through dynamic core utilization and complete device independence.

All are truly upward compatible at both source and relocatable binary levels.

All expand gracefully to any hardware configuration.

All perform identical buffered input-output overlapped with computation for all devices.

Monitors 10/10, 10/20 & 10/30: Single-user monitors for 8K paper tape, 8K DECTape and larger systems respectively.

- I/O Controller
- Run time selection of I/O devices
- Job-to-job transition
- Job save and restore features
- Memory dumps
- System builder permitting creation of custom tailored monitor and I/O systems.

Monitor 10/40: Field tested and proven multiprogramming time sharing system with powerful command structure incorporating all of the features of monitor 10/30 with concurrent real time processing, batch processing, and time sharing.

Monitor 10/50: Full range disc swapping multiprogramming time sharing system incorporating all of the features of monitor 10/40 with greatly extended capacity.

Complete utility software including:

- FORTRAN IV – ASA standard single pass compiler with highly optimized object code fully exploiting PDP-10's powerful instruction set.
- MACRO ASSEMBLER – Flexible assembly language with sophisticated macro facilities and many special data generating, conditional assembly, listing and control pseudo-operations.
- TECO – Powerful context editor with sophisticated macro facilities, and iterative string search, match, and substitution operations.
- DDT – Famous on line symbolic debugging aid with more than 50 commands, permitting dynamic interaction with running programs.
- LINKING LOADER – Loads and links independently assemble or compiled relocatable or absolute binary programs. Twenty special options including automatic library search and chaining facilities.
- PERIPHERAL INTERCHANGE – Transfers alphanumeric or binary data from or to any I/O device with optional editing, sequencing, merging, and syntax checking features.
- FORTRAN IV OPERATING SYSTEM – More than 100 library routines including double precision and complex functions. Dump and chain facilities. Dynamic assignment of I/O devices.
- MANY OTHERS – Including a LISP interpreter, a powerful desk calculator with macro facilities, and a library editing and updating system.

digital

SALES AND SERVICE

MAIN OFFICE AND PLANT

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